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This is an excerpt from Texas A&M Agrilife Extension article Texas Fruit and Nut Production: Improved Pecans, by Monte Nesbitt, Larry Stein, and Jim Kamas.

### **Orchard floor management**

Weeds compete with pecans for water and nutrients and can reduce growth a kernel development. The most practical and widely used system of orchard floor management is the sod and strip system, in which a herbicide- treated, weed-free band is left down the tree row; sod is grown between the bands and maintained by mowing (Fig. 10).

The soil is broken up in pecan orchards by different means across the state. Shallow, clean cultivation (clearing out all plants except the pecan trees) with a disk harrow (disking) is practiced in Far West Texas, where orchards are flood-irrigated with river or reservoir water. It is also used in other parts of the state. However, this practice contributes to erosion and compaction and is impractical in rainy areas because it makes moving the equipment difficult.

Although some Texas growers graze sheep, cattle, goats, and other animals in improved orchards, it is generally not recommended because livestock can compact the soil, damage young trees, and interfere with irrigation, spraying, and harvesting.



Figure 10. A "sod and strip" orchard floor.

### **Fertilizer**

Pecan orchards need applications of nitrogen and zinc every year. Depending on soil test results, they may also need to be fertilized to correct pH problems as well as other macro-and micronutrient deficiencies.

**Nitrogen:** Pecans must have nitrogen to grow well. Apply nitrogen at bud break in April and again in May and June. As a rule, 10 pounds of actual nitrogen is needed in June to produce 100 pounds of pecans per acre. For heavy crops, apply it in July and August also. Young trees should receive small, frequent applications in response to growth from budbreak to late July. Later applications will expose young trees to greater risk of freeze injury.

**Zinc:** Foliar zinc sprays are essential for maximum leaf expansion and pecan growth (Fig. 11). Applying zinc to the soil or via drip systems is ineffective unless the soil pH is 6.0 or less and no limestone has been applied.

Apply zinc frequently in the early part of the growing season. Liquid zinc nitrate and zinc sulfate wettable powder are equally effective. To improve zinc uptake into the foliage, add liquid nitrogen (32 percent urea ammonium nitrate, called UAN) to either type of zinc. Trees that are young, non-bearing, and growing fast need zinc sprays every 14 to 21 days from bud break in April until July. Mature bearing pecan trees respond best to five applications of zinc: the first three applied 1 week apart beginning at bud break, the fourth application 2 weeks after the third, and the fifth 3 weeks after the fourth. Because zinc sulfate can seriously damage the leaves of many types of plants, use zinc nitrate on pecan trees in urban landscapes to reduce the risk of damaging overspray.

**pH:** Have the soil tested periodically to monitor pH and nutrient levels. If the pH is less than 6.0, you may need to add limestone; soil with a pH of more than 7.5 may require micronutrients.

**Potassium and phosphorus:** Potassium fertilizer may be needed every 1 to 3 years, especially on sandy soils. Phosphorous fertilizer is seldom needed in Texas and applying it can aggravate other micronutrient deficiencies. Monitor both elements regularly through soil and leaf analysis.



## Parasites Weigh on Heifer Pregnancy

Body condition influences fertility, making target parasite control a worthy investment.

*By Katie Maupin Miller*

The beef industry loses \$2.8 billion to infertility each year, according to 2019 Applied Reproductive Strategies in Beef Cattle proceedings. Reproduction rates and stayability drive cow-calf producers' productivity, and industry research proves profitability often starts with replacement heifers.

Every female retained in a cow-calf operation takes five to six years of production to pay for herself and return profit, according to Dr. Doug Ensley, Boehringer Ingelheim technical marketing manager. Ensley drove home fertility's importance for producers in a presentation, "The More Things Change – Parasites and Reproduction," during the company's Business of Beef: Health and Management Summit in February. With years of experience in veterinary practice, academia and industry research, Ensley knows firsthand the importance of getting heifers bred quickly. Research suggests first-calf heifers calving in the first 21 days of calving season remain in the herd longer than those that calve later. Additionally, cows calving in the first 21 days of the season for an eight-to-nine-year life produce the weaning weight equivalent of up to two additional calves during their lifetime. This is why calving early is critical.

"The sooner she calves, or the younger, the better," Ensley said. "The sooner she's going to breed back, the earlier she's going to calve." Ideally, Ensley said, replacement heifers should cycle by 12-13 months of age and be bred by 15 months of age. The fertility of heifers during their pubertal estrus is markedly lower than their third. First-calf females calving earlier in the season also have a greater chance of breeding back after a 60-day breeding period, helping producers reach the industry benchmark of 85% of first-calf heifers rebreeding during that time.

Like beef cows of all ages, first-calf and replacement heifers' fertility is largely affected by their body condition score, or BCS, during breeding season. Ensley cited beefrepro.org's figure that greater than 80% of cows cycle at BCS 6, instead of just 40-48% of cows at BCS 4-4.5. Simply put, the closer to a BCS 6, the more heifers and cows in estrus at breeding and the more pregnant at the end of the season. Ensley said this is mainly due to the beef female's energy priorities. Before estrus and pregnancy, cows and heifers must support their basal metabolism, grazing, growth, reserve energy, produce milk and add body fat.

"In their first 80 days following parturition, you remember that the first-calf heifer is continuing to grow. She's supporting lactation. She's trying to resume cyclicity, and she's getting ready to conceive for a second pregnancy. And you think about that. She's lactating, and all of those things, her maintenance requirements are 20% higher," Ensley said. "We have to remember that. How many times have you had a heifer have a calf, they get preg-checked, and the vet says second calf heifers are all open or a good majority of them? A lot of that is because we forget about that nutritional side."

The direct correlation to BCS and cow herd fertility is where targeted deworming and parasitic control influences a producer's bottom line.

### Parasitic Pressures

Parasites and parasitic pressures affect a cow herd in many ways. According to Ensley, parasites directly suppress appetites, interfere with digestion, increase gut motility and play a role in mucus secretion, absorption and protein loss. Indirectly, cattle parasites suppress immune system responses.

This is why dewormers have a positive influence on cow-calf producers' profitability. In an Iowa State University study cited by Ensley, dewormers had a 23.62% influence on weaning rate, including pregnancy rate and survival rate of the calf. Deworming provided the biggest return on investment and had the most significant impact on profitability in the study. Ensley looks at a sustainable deworming portfolio of products as an investment. The long-term investment in a targeted, sustainable deworming program is worthwhile to cow-calf producers, he said.

"Let us focus on these animals that are our highest risks that can give us the biggest return on investment. That's going to give us the biggest return to your herd," Ensley said. "The food grazing they're doing or the feed they're eating is going to do what you as a producer want it to do. This is to grow that heifer and have the herd cycle sooner, delivering the results that you want."



## Parasites Weigh on Heifer Pregnancy...Continued

Body condition influences fertility, making target parasite control a worthy investment.  
*By Katie Maupin Miller*

Ensley encouraged producers to stop simply deworming cattle as they've always done it or at times when it is most convenient. Instead, he suggested tailoring the program to protect the most high-risk animals on an operation – such as young females – and tamp down the parasitic load on grazing pastures. While a pasture will never be parasite-free, spring deworming at the beginning of grazing season can greatly reduce juvenile parasites hatched from eggs deposited during the summer.

“Parasites are out on pasture. They are going to be there and get the opportunity to infect the animals,” he said. “But, we have that opportunity to take care of those parasites as they infect the animal.”

Worming treatment types can affect the herds performance and reproductive success. Studies on eprinomectin versus Ivermectin treatment suggest eprinomectin-treated herds produced more calves, had heifers pregnant earlier, more calves born earlier and heavier calves on sale day, Ensley said.

“They gained significantly better and had better condition or better weight gain. Their weight change was better for those heifers. So that meant they were in a positive energy balance,” he said of the study results. “The other thing is that 77% of those animals got bred AI, that's early in that season, with a 95% pregnancy rate above the benchmark. Again, what was the goal? Get them bred early so that they got to stay in the herd for a length of time and keep them in energy. I think this really tells a lot.”

### Best Practices

As with most cow-calf management practices, proper protocol is imperative to success. Ensley said producers should follow best deworming practices for the most significant efficacy. “I remember back in practice in the late-80s, you would deworm something, and they just shine up, meaning it was a miracle drug,” Ensley said. “I think its still there. As long as we start to do it the right was, use it the right way and focus on the right animals.”





# Get Forage and Soil Tested for Increased Productivity

DAKOTA KEMPKEN: BANDERA COUNTY EXTENSION AGENT-ANR

Many livestock and hay producers often overlook the importance of testing the nutrient quality of both the forage plants they are utilizing and the soil in which the forage grows in, even though the contents of both can have big impacts on livestock performance. Conducting a routine analysis of your forage and soil can tell producers exactly how they are looking in terms of nutrient content, nutritive value, and even potential toxicity of forages.

## Sampling Forage:

Analyzing forage can tell producers about the overall energy value in the forage, including crude protein and total digestible nutrients (TDN), two important factors in overall forage quality. Knowing this can help determine the amount of energy that livestock are taking in through the forage. Forage samples can be taken both in the field and from hay. To collect hay samples, a bale probe is inserted midway up the side of the bale towards the center and about 12-18 inches deep. The sample is then poured into a container (often a vanilla envelope or a sealable plastic bag) and is submitted to the Extension Soil, Water and Forage Testing Laboratory in College Station. It is advised to collect a sample from about 5 bales and thoroughly mix the samples together for a more accurate analysis. Collecting from the field is more difficult, as it is important for collection sites to have received a uniform treatment. To collect a sample, forage should be collected from 10-15 sites after grazing, mixed together thoroughly, and sealed in a paper sack or envelope, and sent to the testing lab.

## Sampling Soil:

No matter what you are growing, conducting routine soil analysis tests is crucial for increasing plant productivity. Soil tests are able to tell the producer the nutrient contents of their soil all the way down to organic matter. Soil testing materials can be obtained from your local county Extension office. To collect a sample, use an auger or any digging tool to dig a sample about 6 inches deep from multiple locations in the target area (oftentimes up to 20 subsamples per field), mix into a composite sample, and submit it to the testing lab.

All tests should be submitted with payment and an information form, which can be obtained at your local county extension office, or at the testing lab's website, [soiltesting.tamu.edu](http://soiltesting.tamu.edu). Your local county extension agent can also provide assistance on properly collecting samples.





# Cotton Pest Management

STEPHEN BILES

Cotton fields range from pinhead square to early bloom. Most fields are susceptible to cotton fleahopper damage and the potential for bollworm losses. We are finding cotton fleahoppers in numbers as high as 1 per plant, averaging around 20-30 per 100 plants.

Continue to scout for cotton fleahoppers through the first week of bloom. This pest may cause fruit shed of small pinhead squares. Squares larger than matchhead size are generally safe from fleahopper damage. Once the plant has reached bloom, 80-90% of the fruit that will be harvested is already on the plant. Thus, we usually do not have yield limiting populations of cotton fleahoppers after bloom.

Scout by visually inspecting plant terminals, the top three nodes, looking for adults and nymphs. The nymphs can be very small, and I have begun using a 2-gallon bucket to beat plants, 2-3 at a time, and looking in the bucket for fleahoppers (especially nymphs). Combining these two methods will increase your confidence in what you are finding.



Use an economic threshold of 15 cotton fleahoppers per 100 plants to determine when treatment is needed. For the past 20 years we have relied on Bt cotton for control of cotton bollworms. But in the past few years, the levels of worm control from some of the Bt technologies has been declining to a point that additional control has been necessary to prevent economic yield losses.

This week's rainfall may trigger an egg lay and fields should be scouted for worm eggs, small larvae, and feeding damage. I do not suggest treating based on egg lay but finding eggs can help you know when to expect to see small worms. Remember the worm has to feed on the plant to get the Bt toxin, so don't be alarmed if you find small 1/8-inch worms. But worms larger than 1/4-inch are not being controlled by the Bt. The cotton bollworm egg will hatch three days after it has been laid. On the first day it will be pearly white, then tan-brown on the second day and darker brown to black on the third day. Scout fields by looking for terminal feeding and follow the feeding to find the worm. It is also important to look lower in the plant canopy for worms as eggs will often be laid on blooms and small bolls. Inspect 20-40 plant terminals, squares and small bolls for worm feeding. Recent field studies have looked at treatment thresholds based on worm feeding. An economic threshold of 6-8% square and boll feeding has been found useful in preventing losses.

Once a field has 1-inch bolls, begin to look for stink bug feeding by pulling 1-inch bolls and inspecting the inside for evidence of stink bug or verde plant bug feeding. Check 50 bolls per field from several places in the field. Increase the number of bolls you check if you are finding stink bug feeding until you are confident in the level of feeding. I have found that bolls without feeding spots on the outside usually do not have internal feeding. So, when popping bolls open I usually separate the bolls based on external spots and save those without spots for last and discard them if the threshold is exceeded before I get to them.



## Effects of Drought On Scaled Quail In West Texas

LUKE HENDRYX - ANR EXTENSION AGENT, BREWSTER - JEFF DAVIS COUNTIES

West Texas is a unique place, home to a myriad of wildlife species, all of which depend on the quality and conditions of the diverse habitats found throughout the region. While rainfall scarcity is common, long term drought often plays a large role in the population dynamics of wildlife in the region, including Blue Scaled Quail. The number of quail in any given year in West Texas is directly correlated with rainfall amounts.

Blue Quail are found across much of the Western Regions of Texas, including the Trans Pecos area of Far West Texas. Considered to be the primary upland game bird in the Chihuahuan Desert, these birds are better suited to arid climates, as well as slightly larger than Bobwhites, which are more prevalent elsewhere in the state. Their name is derived from their blue-gray color along with “scale” patterned feathers across their breast. The lifespan of these birds is generally very brief with the average lifespan lasting only 9 months, with a maximum lifespan of 4-5 years, being very uncommon. The average annual mortality rate of these birds ranges from 60-80%, thus hunting must be done in a conservative method that doesn’t cause additional stress on already low populations.

While the Blue Scales of West Texas are better adapted to dry climates than other species, their populations still vary depending on rainfall conditions and grazing management. One of the biggest factors affecting populations is rainfall timing, with a significant moisture event jumpstarting the nesting cycle which usually lasts a month and half, with the average clutch size being 12 chicks. Birds start to form mating pairs in the spring and generally stay together through August or September. Nesting success requires adequate cover to provide protection from predators as well as harsh weather conditions. Often times dry conditions, paired with intensive grazing by livestock, reduce the forage cover to a level that is detrimental to quail populations. Quail sometimes turn to the prickly pear, cholla, yucca and catclaw as well as other plants for protection during nesting, when grass cover nesting sites are unavailable. This thorny vegetation provides added protection and discourages predation of the clutch.

Another key effect of rainfall, or lack thereof, is insect population. During the first six weeks of life, quail chicks rely almost solely on insects for their diet, and when rainfall is below average so is the insect population which in turn adds to the already high mortality rate.

Drought is a common occurrence in West Texas, and often times has deep reaching impacts as well as long lasting effects. Grazing is often pushed to the limit out of necessity and henceforth things like quail habitats suffer. Some management practices that are beneficial for quail at all times, are simply referred to as Quail Waters. A Quail Water is generally a slightly overflowing watertrough or storage tank in the pasture, that provides moisture as well as increased vegetation and insect concentration, all of which greatly benefit the Scaled Quail, during times of extreme drought as well as during years with adequate rainfall. Quail get 70-80% of their water needs from their diet and metabolic water, but the additional 20-30% come from standing water sources. Supplemental feeding, such as quail blocks or milo, can also be beneficial for scaled quail populations at all times, but especially while dry conditions have limited their natural resources. The main benefit of supplemental feeding is the reduction in homerange size, which leads to easier management of the habitat, as well as an increase of birds in the management zone.

Dr. Ryan Luna at Sul Ross State University and the Borderlands Research Institute have amazing insight and in-depth knowledge of West Texas quail dynamics. Scaled quail are a vital wildlife asset in West Texas, and just like all other wildlife, they are being subjected to changes in their habitat due to weather patterns, as well human influence. With ongoing studies on the species along with better management techniques, there is hope for a bright future for this West Texas staple.



# Mexican Needlegrass

## Dawson Owens – CEA, ANR – Crockett County

Mexican needlegrass (*Amelichloa clandestina*) also known as Mexican ricegrass is a nonnative grass introduced to Texas from Mexico that was first observed in Kimble County in the early 1950's. Since then, it has spread throughout the Edwards Plateau and parts of Central Texas. It is a cool season, perennial bunchgrass that has established on roadsides, fence lines, oil and gas sites, reseeded pastures, and native pastures with deep soils. It can be very invasive; native perennial grasses are much more desirable to livestock and compete poorly with Mexican needlegrass. With this competitive advantage, Mexican needlegrass can quickly turn a native pasture into a dense monoculture. Very little is known about controlling this invasive grass and that is causing significant concerns to landowners.

The growth habit of this invasive plant is a bunchgrass that forms mats, dense tufts, or tussocks with knotty, rhizomatous bases. It resembles Texas wintergrass (*Nassella leucotricha*) in early Spring and a mature plant grows to approximately 2 feet tall. Leaves are mid to dark green year-round and are very rough. The leaf edges are usually folded or rolled, and the blade tips are rough. As the plant dries the leaves become ridged and erect making it even more unpalatable for grazing livestock. The seed head is 4 to 8 inches in length and is a narrow and open to slightly contracted panicle with many spikelets. There is one floret (individual flower) per spikelet. Florets are less than ½ inch in length with a 2- to 3-inch-long curvy awn. Mexican needlegrass is a prolific seed producer, but it is also capable of vegetative reproduction through tiller forming buds at the base of each stem. Active growth of established plants occurs throughout much of the year. From March through December plants are actively growing. The plant flowers April through June and seed set occurs June through October. Germination of seedlings occurs January through April.

The physical characteristics of Mexican needlegrass make it highly unpalatable to livestock and therefore greatly reduce a pasture's carrying capacity. Livestock such as cattle, sheep, and horses generally avoid Mexican needlegrass. However, goats have been known to utilize the grass. Biodiversity of an infested pasture is also reduced because of the plant outcompeting native grasses and other flora. Increased grazing pressure on more palatable native grasses in a pasture infested with Mexican needlegrass can also compound the problem. Mexican needlegrass is very difficult to control once it is established.



Preventing an infestation through careful management is critical.

Monitoring livestock movement and stocking rate can prevent infestation or curb an existing infestation of Mexican needlegrass. Populations are known to increase due to heavy grazing and soil disturbance. If infestations are small, digging and hand weeding can be used as mechanical control options. Shredding and mowing are not viable options because they aide in seed dispersal. Using grazing animals as a means of control is difficult as well because the animals usually eliminate the desirable plants first. Prescribed burning during the dormant season has shown potential in slowing spread and seed production. However, dormant vegetative buds may be activated by the fire causing rapid resprouting. Therefore, a follow-up management strategy is needed. Chemical control is an option. Research suggests Mexican needlegrass can be killed using individual plant treatment (IPT) method of foliar applied glyphosate at a rate of 1.5% or soil-applied hexazinone at a rate of 2 ml per plant while the plants are actively growing. If using herbicides be sure to read the label and follow instructions carefully.

# Preparing Your Garden for the West Texas Heat

MATLIN SAIN: PRESIDIO COUNTY EXTENSION AGENT

We all know the saying, "April Showers Bring May Flowers", right? Well, "West Texas heat brings destruction to your garden" is accurate too! So, how do you prepare your garden for the heat to prolong the growth of your vegetables, fruits, and flowering plants? Here are some great ideas that you can implement into your own backyard:

**Mulch** -- If you mulched your garden beds last year, well it is time to replenish that mulch again! Mulch is such a fantastic tool when it comes to keeping our soil temperatures lower and preventing water loss from the soil. Also, the great thing about mulch is there are so many different compounds that you can use. If you have left over pine needles, those can definitely be used, as they take a very long time to break down. However, be careful because they will blow away in the wind.

**Water-Scheduling** -- While July through October is the typical monsoon season for most parts of West Texas, it is still smart to invest in a water soaker and/or timer. Typically, the best time to water is in the evening to prevent water evaporation from the soil. This can easily be done by investing in a timer that you can install on your waterspout or by using a water harvesting system that you have readily available in your backyard. However, be sure to test the pH and bacterial growth of your harvested water to prevent contaminating your plants.

**Shade Cloth and Hoop Houses** --

Hoop houses are still a new and innovative way for gardening. Hoop Houses are so incredibly easy to install. The supplies you need are PVC Pipe that is easily bendable, a clamp that can be screwed into your gardening box, and some shade cloth. The percentage shade cloth recommended is between 30-50%. Any higher than 50% and this could drastically affect the amount of sunlight that your plants need. Also, make sure to investigate the requirements of your vegetables and fruits, as different varieties need varying levels of sunlight and water.



Hoop Houses can be used in small scale gardening and for large

investigate the requirements of your vegetables and fruits, as different varieties need varying levels of sunlight and water.

**Know When To Harvest** -- It is very important to keep a close eye on your vegetables and fruit during the summer months! Most varieties of vegetables will disperse their seeds right before dying off. This is a great time to collect seeds if possible and use them for next year. Also, when keeping a close eye on your garden, your plants will begin to show signs of plateaued growth. This is a good time to harvest your summer crops and start preparing your garden once again for winter crops.

Having trouble growing plants in your garden? Maybe it is time to test your soil! Contact your local county extension agent to receive a free soil sample bag and testing materials.



## Path to the Plate: Grapefruit: A Tasty Spring Snack

BRENNYN BURKHOLDER

With spring beginning, fruit is about to be back in season and eating grapefruit provides a great source of nutrients, while still tasting sweet!

Grapefruit makes up a large portion of the citrus industry in Texas. Since most of Texas typically offers a warm climate, fertile soils and lots of sun, grapefruit thrives in these environments. However, they grow best commercially in the lower Rio Grande Valley. Grapefruit production in Texas in 2019-2020, was up two percent from the 2018 season, boxing around 6.20 million boxes.

Do you know why we named this fruit “grapefruit”? It is because grapefruit grows in clusters like grapes. Grapefruits are typically not grown from seeds, but from grafting. This is due to disease and low fruit production. Grafting is where two or more plants are joined and grown as a single plant. Grapefruit trees usually take three years before they begin to produce a sufficient amount of fruit. Grapefruit trees can produce large amounts of fruit; a 10-year-old tree might produce 250 pounds of grapefruit!

Current dietary recommendations encourage us to eat one to two cups (depending on age, sex, and level of physical activity) of fruit each day as part of a healthy diet. A medium grapefruit accounts for one cup of fruit, while offering a tasty source of vitamin C, vitamin A, and potassium – all for less than 130 calories!

### Spinach- Avocado Salad with Grapefruit Vinaigrette

#### Dinner Tonight, Texas A&M AgriLife Extension

##### Ingredients:

##### For the salad

- 1.5 lbs. fresh spinach rinsed and dried
- 0.5 lb. fresh arugula rinsed and dried
- 1 1/2 cup red onion, sliced

##### For the vinaigrette

- 1/2 cup olive oil
- 1/4 cup balsamic vinegar
- 2 Tbsp. honey Juice and zest of 1 Ruby Red grapefruit

##### Toppings

- 2 avocados, sliced
- 2 Ruby Red grapefruits peeled, sectioned, and chopped
- 1/4 cup pecans, chopped

1. Wash your hands and clean your cooking area.
2. In a large bowl, toss together the salad ingredients. Set aside.
3. In a small bowl or container with lid, whisk or shake all of the vinaigrette ingredients.
4. Assemble the toppings over the salad mixture. Top with the vinaigrette and serve.

##### Sources:

Grapefruit: A Tasty Spring Snack, Brenyn Burkholder <https://pathtothepate.tamu.edu/2021/04/07/grapefruit-nutrition-and-facts/>

Spinach-Avocado Salad with Grapefruit Vinaigrette <https://dinnertonight.tamu.edu/recipe/spinach-avocado-salad-grapefruit-vinaigrette/>



PATH TO  
THE PLATE